

Z88 EPROM

February 1992

Vol.6 No.1

Contents

Page

Club Addresses	2
Editorial	3
Helpline	4
Members' Letters	5
More Z88 Miscellany	20
Z88-Mac File Transfer	25
Printer Set-up Helpline	27
Hints for Beginners	30
Small Ads & Swapshop	32

Club Addresses

All articles for Z88 EPROM and any membership matters (**except** Software Library) should be sent to:

**ROY WOODWARD
Z88 USERS' CLUB
68 WELLINGTON STREET
LONG EATON
NOTTINGHAM
NG10 4NG**

All requests for software from the Club Software Library, (**but not** special offers), items for inclusion in the Library, and EPROMs for erasure should be sent to:

**IAN BRABY
THE SOFTWARE LIBRARY
Z88 USERS' CLUB
3/8 JENNER ROAD
GUILDFORD
SURREY
GU1 3PL**

Please note that the **Library** address is the one to use when sending for a list of Library programs - this list is **not** available from the main Club address. Be sure to enclose £1 plus a SAE for the list. Also note that this list now includes the CLI Library List.

CLIs for inclusion in the Software Library should be sent to:

**MICHAEL HEY
18 WOODSIDE ROAD
SANDIACRE
NOTTINGHAM
NG10 5GP**

ALWAYS include your Membership Number with any correspondence. This is not just to be awkward - now the Club is large it can be very time-consuming searching the database for a member's number. Your number is printed on the address label of each issue of **Z88 EPROM**. Please be sure to enclose a stamped-addressed envelope with anything needing a reply.

Editorial

Here we are again. Sorry there has been another pretty long gap between mags, but as I explained in the last issue, contributions have been rather thin on the ground. My appeal in the last issue has thankfully brought in a number of articles, and plenty of letters, but unfortunately many of them were on the same subject, namely the problems raised by Robert Ward in the last issue! I have never had so many responses to one query before, and had to try very hard not to print them all and have a special issue of Z88 EPROM dedicated to Robert's queries!

Seriously, keep up the flow of articles, and I shall endeavour to follow this mag quickly with another, and soon we might be back on schedule.

Moving on to other things, this is the final call for Workshop tickets. As you will have read in the last issue, the next Club Workshop is on Saturday 25th April 1992, and as usual everyone who is anyone in Z88 will be attending. So far tickets for the Workshop have been very slow, but this seems par for the course in the past, and I am hoping for the usual last minute rush to make up the numbers to somewhere near decent.

A new attraction at this Workshop will be a Bring and Buy stall, where you can bring along all your surplus computing equipment, leave it on the stall, and hopefully sell it to one of the other people attending. There will be a small charge, basically 5% of the selling price of the goods, subject to a £2 minimum commission.

While on the subject of the Workshop, I hope to be able to announce an exciting new upgrade option for the Z88 on the day, so be sure to bring along your machines and their grey plastic boxes!

The disk drive project, RangerDisk 2, is looking very promising. Response so far has been much higher than I anticipated - in fact the first batch of drives had sold out within a few days of the magazine appearing. At the moment I am still waiting for the second batch, and orders received now look like being fulfilled within about four weeks - something to bear in mind if you are going to order.

One final point, regarding HITEK Marketing. Several of you have taken advantage of the Credit Card Order telephone number I published last time, and placed orders for Z88 peripherals from HITEK Marketing. Please note that HITEK is completely separate from the Club, it is a company run by my brother from a different address, and neither I nor the Club have any interest in HITEK. It should therefore be obvious that I cannot accept Credit Card orders for HITEK goods, and HITEK themselves do not accept credit cards. All orders for HITEK goods should be sent directly to HITEK Marketing at their Derby address.

Helpline

If you have a technical query, write to one of our Helpliners listed below. Please note that you should include a stamped addressed envelope or sufficient return postage for your reply.

CLI Files - Contact Michael Hey by post only at: 18 Woodside Road, Sandiacre, Nottingham. NG10 5GP

Z88 to Amstrad PCW Link - Please write in the first instance to: Mr A West, 16 Southway, Burgess Hill, Sussex. RH15 9ST.

zBASE, CLI and all Wordmongers products except TX and Comms software - Contact Jason Crook (ex of wordmongers) at TPR. J.S.A. Crook, 4TP B SQN, The Royal Hussars (PWO), Swinton Barracks, BFPO 17. I will also write to order in zBASE.

zBASE - Help on commands and programming. I can accept info/programs on paper. EPROM, zTape cassettes or IBM disk. Contact Robin Jarvis, 27 Gloucester Road, Waterlooville, Hants. PO7 7BJ.

Z88 to Amstrad CPC Link - Contact Duncan W. Kennedy at 32 Otterston Grove, Dalgety Bay, Fife. KY11 5PA.

BASIC Programming - Contact Richard Russell at 59 Campbell Road, Gravesend, Kent. DA11 0JZ.

Interfacing Z88 to various hardware - Mac, BBC, PADs, also UNIX and C experience - Contact J.P. Knight Email JANET on jpknight@uk.ac.lut.sun, or snail mail during term time to Room 66, Hazlerigg-Rutland Hall, Loughborough University of Technology, Ashby Road, Loughborough, Leics, LE11 3TZ.

Anything Educational - Please contact Bob Shore, 8 Anchor Close, Hathern, Leics. LE12 5HP. Telephone 0509 842670.

Machine-code Programming - Please contact Richard Smith, 29 Sandhouse Crescent, Scunthorpe, South Humberside, DN16 1JF.

Printer Setups - Please contact David Stewart at 44 Margetts, Hemingford Grey, Huntingdon, Cambs. PE18 9EP. If you have any queries concerning general printer problems, eg. correct use of cables, how to connect up the printer, printer code language, understanding the information in the printer handbook, etc. please write to David. Notes on Printing, covering the above topics, are available by post from David. Price £3.00 including postage for 40-odd pages of detailed advice.

File Transfers - Free file transfers to/from most formats (excluding Amiga). 10 files max. and must be Z88 related - no commercial programs copied. Send disk and pre-formatted copy media, with Club Membership and return p&p to: Phasor Video, Elcot Lane, Marlborough, Wilts, SN8 2AZ. Tel: 0672 514451 (2.00-5.00pm Mon-Fri)

Members' Letters

Richard Russell (0365)
Gravesend
Kent

Dear Roy,

I am prompted to write this by Christian Pearson's letter about a home-brew EPROM eraser (vol.5 no.10), but it may be of interest to anybody who uses EPROMs in their Z88. It comes in the form of a warning: don't assume that an EPROM is erased just because it reads as 'empty' in your Z88.

This may sound rather daft, but let me explain. The way EPROMs work, put crudely, is that each bit of information is stored as a charge on a (very small) capacitor. When you program the EPROM the capacitor is charged, and when you erase it is discharged. The charge (actually voltage) on the capacitor is sensed by circuitry on the chip, and causes either a logic 0 (charged) or logic 1 (discharged) to be output when read.

on the chip, and causes either a logic 0 (charged) or logic 1 (discharged) to be output when read.

Now, the thing is that charge is a continuous (analogue) quantity: an EPROM cell may be in any condition between fully discharged and fully charged. Also, the circuitry which senses the level of charge is inevitably dependent on temperature and voltage conditions, so its 'threshold' is not very stable. If the cell is fully charged or discharged there will be no problem, but if it is partially charged it may read as a 0 one day and a 1 the next!

When you erase an EPROM, the charge leaks out of the cells at a fairly slow rate. When the device reads empty, it means the charge has fallen below the threshold of the sense circuitry, but there may be nearly 50% of the original charge left! A slight change in environmental conditions, and the EPROM will no longer read as blank! This may give rise to unreliable operation, and possibly loss of valuable data.

The moral is: always erase an EPROM for at least THREE TIMES the time it takes to first read as empty in your Z88. This way you will ensure the cells are fully discharged.

N. Matthews (3967)

Derby,

Dear Roy,

Just a few words to say how much I enjoy the magazine, how helpful certain traders of Z88 products are and a few words of help to another member.

I find that the magazine is a jolly good read, I like getting updates of what is new for the Z88 and reading reviews of new (or not so new) products. I find that this helps me make up my mind about various products and the pro's and con's of buying them.

A good venue for actually seeing new products, (and occasionally picking up a bargain), is the All Formats Computer Fairs. I look upon them as a good day out and although the admission compared with other places is rather steep at £4.00, at least the Z88 Users' Club is usually there, along with Rakewell, and Vic Gerhardt, who is a mine of information on the Z88, the Psion Organiser and computers in general.

At one of the fairs, Birmingham, I believe, I was having trouble in downloading spreadsheets. I use the QZ package by Sector Software, on the QL, and when I tried to download a spreadsheet, all the formulae were downloaded too, which I did not want. I mentioned this to Mr. Gerhardi and he suggested that I should print out the spreadsheet, using <> PO on the Z88. I admit that I had heard of this before , only using an Atari ST to download to.

On arriving home, I powered up the QL and loaded in the QZ program, then I loaded a spreadsheet into Pipedream on the Z88 and proceeded as follows. On the QL I pressed R to read a file from the Z88 and at the prompt I entered a filename on the QL. Then on the Z88 I pressed <>PO to print out the file and then enter. The file began to transfer between the machines WITHOUT the formulae. When the transfer was complete I pressed [X to switch the Z88 into the Imp-Export mode and then pressed E to send an endbatch code to the QL. The QL beeped in appreciation and then told me to press space to return to the main menu.

Thank you very much Vic, I can now save my spreadsheets to disk and read them using the Editor, a text editor from Digital Precision. Also by saving the file with the suffix _exp I can import the file into Quill.

I noticed in your last magazine that there was a letter from Keith Reader (4853) from Chorley who also uses a QL about the difficulties of getting a transfer of Pipedream databases to Archive and vice versa. The QZ package has this built in to it but unfortunately I have not heard of Sector Software for some time now.

The QZ Pipedream to Archive and Archive to Pipedream routines were written by Dilwyn Jones of Dilwyn Jones Computing, 41 Bro Emrys, Bangor, Gwynedd LL57 3YT (Telephone 0248 354023) and he may agree to sell these to you separately.

Thanks once again for the magazine Roy and I hope that this has been of some use to you all.

Philip Hodson (0713)

CATALOGUING.

Backing up files is an interminable pain as one tries to remember which one has already been consigned to disk, tape or Eprom, and

which one has not. Michael Hey's Blackspot Dec 91 issue describes the problem laudibly.

By pressing [JF, and entering the filer; then pressing ENTER with the cursor over CATALOGUE FILES one enters the Z88's magic world of keeping tabs on all your files. By comparing the size of each file one can get a fair idea of whether one has updated it or not.

But there is no capacity to compare files. and that is the whole point of cataloguing.

Ideally, the Z88 needs to present each file, those in RAM with their counterparts on tape, disk or tape, for comparison in a form which we can see at a glance.

This comparative display should read:

```
Z88 RAM FILE: :RAM.1/Letter 30-Jan-1992 18:54:04 2534 DISK,  
TAPE or EPROM FILE: /Letter 17-Jan-1992 15:31:24 1764
```

```
Z88 RAM FILE: :RAM.1/Addresses 30-Jan-1992 11:02:59 17654  
DISK, TAPE or EPROM FILE: /Addresses 29-Jan-1992 17:29:43  
17654
```

ETC.

From this comparison layout it is easy to see that while the file named LETTER has been amended, the file named ADDRESSES has not, and therefore does not need to be backed up again.

Unfortunately the CATALOGUE FILES of the Z88 is not so convenient. I wonder if there is anyone out there who would like to design a software program to do the above suggestion?

With the screen showing only seven lines, and with the possibility of many files to compare, the only practical solution is to commit the catalogue to paper.

How may this be done?

The complete catalogue of the Z88, including a print-out of files in sub-directories may be obtained as follows:

Enter the filer [JF. Press ENTER with the cursor over CATALOGUE FILES, or alternatively type in <>CF. At the prompt NAME: type in:
//

The Z88 is now set to list the whole contents of any one DEVICE, eg RAM.1, including sub directories.

Before you actually set the listing in motion, you want to send the data to the printer. So having first made sure that your printer is connected, switched on and ready to receive, you then type in `[[+P`.

`[[+P` ensures that anything sent to the screen is also passed to the printer. So now press ENTER, and watch your printer burst into life, with the catalogue of the whole DEVICE being listed.

As soon as the cataloguing is complete, type `[-P` to disengage the printer from the screen.

So as you can see, it is quite easy to obtain a full catalogue listing on paper.

You may also wish to commit that catalogue to computer file.

To do this, the process is basically the same, but instead of typing in `[[+P`, type in `[[+S`. This will commit the contents of the screen to file in `:RAM.-`

So: Select Catalogue Files press ENTER type in `*//*` Select `[[+S` press ENTER

On completion of the catalogue listing, type in `[-S` to disengage the screen from the file named S.sgn which has been deposited for you in `:RAM.-`

Now go to a blank Pipedream application, press `<>FL` and type in `<>SV` to select the device `:RAM.-`

Find the file S.sgn, place the cursor over it and press TAB to mark it. Press ESC and you will find you are loading the file S.sgn.

Convert the LOAD AS PLAIN TEXT to "YES", press ENTER and the file S.sgn loads into Pipedream.

Now, because files should not be left in the device `:RAM.-` (they may cause the machine to crash I'm told) you must erase the file S.sgn in `:RAM.-`.

Go to the Filer, `[[F`, place the cursor over the file S.sgn, press TAB to mark it, type `<>ER`, press ENTER thereby erasing the file.

Now change the device `<>SV` from `:RAM.-` to `RAM.0`, or `:RAM.1` etc, leave the Filer.

Preserve your catalogue, now in Pipedream, by renaming it. Use <>FC. Save your catalogue in a device which is not :RAM.- under whatever name you choose.

Committing the catalogue of a disk to file requires this latter approach.

Because the port is used by the disk drive, you cannot send the data directly to the printer which competes for the same port, so you must send the disk catalogue to file S.sgn.

I tested this method with a Ranger Disk, and was disappointed to find that on selecting the command CATALOGUE DISK, the program doesn't understand *//*

That means that each sub-directory has to be opened in turn, and then it's catalogue listed. However the principle is the same, and it is at least possible, with perseverance, to commit the whole contents of the disk catalogue to paper.

Connect up your RangerDisk and press [JZD.

The cursor should be over CATALOGUE DISK so press ENTER. Now type in [J+S to commit whatever else is printed to screen to the file S.sgn in :RAM.- Once the cataloguing is complete, type [J-S to switch off the connection between screen and file.

Load the file S.sgn into Pipedream as before and print it out as a normal Pipedream document. You will find that the data needs to be topped and tailed, since it contains everything which Ranger-Disk has sent to the screen, in addition to the info you require.

Subdirectories will be listed so then go to each and repeat the procedure. The file S.sgn will be overwritten each time with new input data, so you do not need to erase it until you have all the information you require from the disk catalogue. But then, remember to erase file S.sgn.

So, now with your respective catalogues on paper, you can compare them for updating.

Presumably this method can be used to commit the catalogues of Z-tape and Eprom to file and then to paper but I have not tried it. Any comments anyone?

With larger volumes of RAM now available, the trend is to keep more and more files within the computer. Cataloguing, tracing and

backing up becomes very long-winded even with only 200K of files. Michael Hey knows that problem very well!

This is why Vic Gehardi and I have been generating ideas for software which will load the whole of your Z88 to disk. This means that if your six year old manages to induce a hard reset, all is not lost as long as you have been diligent about backing up your files to disk. This intended software will permit the restoration of all your directories and subdirectories, and enter all your data from Disk into your various directories so that you could recover the disaster with a minimum of effort to you.

Perhaps, more importantly, this concept means that you could back up your whole Z88 to a new disk each night if you wished, leaving the software to get on with it.

I hope that the concept would include a search facility which will find a given string in any file anywhere within the computer, and secondly a facility to find any particular file by name in any directory.

Vic believes this idea is a winner, So do I, and so do at least sixteen others. As some of you know already Vic has named the concept FERRET. But it may cost around £6000 to develop.

There are some 250 RangerDisk owners, and if half of those supported the concept, development costs would be only around £48 each, plus the Eprom.

So far only sixteen replied favourably to Vic's circular, but then he did suggest the cost would be around £149 including Eprom. That's because he conservatively hoped for about 50 replies out of 250 owners.

I feel that more would have considered the product desirable if the price had been suggested as lower. So come on folks, if you have a disk drive, how can you do without this splendid idea?

Give Vic a ring at Rakewell Ltd (Tel 0296 630617) or drop him a line. Give him lots of encouragement. Give him your commitment to the project. Let's try and get Ferret moving.

A W Kitchenside

Addlestone

Surrey

Dear Roy,

With reference to Robert Ward's query on paragraph numbering in the December issue of Z88 EPROM, Queries, Hints and Tips.

A possible solution is given below. I think it should work but am unable to check it as I do not print directly from my Z88 since I transfer all files to an Archimedes for output.

To the left of the text columns insert two columns, these need not be very wide as column A will have only one character and column B will contain the paragraph numbers. The left most column of normal text will then be column C.

Whenever a new paragraph is started put a character, say \ in column A, as a marker. In B2 enter the expression:-

```
IF(A2="\",MAX(B$1B1)+1,"")
```

replicate down column B for the full length of the text, noting that the first paragraph must start at a line number ≥ 2 . The decimal places in the paragraph numbers of column B can be adjusted as required.

The basis of this is that PipeDream looks in column A for the marker. If present, it then looks for the maximum number in column B above that row, adds 1.00 to it and prints it in column B of that row, no marker and it is left blank.

When printing select "Yes" for Print only range of columns, and give the range from B to the most right hand column reference.

The file must be retained with column A on saving as the paragraph numbers in column B cannot be fixed as far as I know in Z88 PipeDream and column B must remain as active "IF" functions. However, printing columns from B to the right only will eliminate the markers from the hardcopy.

I have been unable to get PipeDream on the Z88 to recognise a blank line hence the need to introduce the extra column A which contains the marker. In PipeDream 3 or 4 on the Archimedes, the initial column is not necessary as one can simply enter into A2 the expression:- `IF(B1="",MAX(A$1A1)+1,"")` and replicate down. These paragraph numbers can then be snapshot to fix them before saving the file.

PipeDream

PC PipeDream is the perfect companion for your PC and Z88. Using the PC LINK EPROM card and lead (available separately) you can load PipeDream files from the Z88 filing system directly into PC PipeDream to continue work on them. Whilst having many more facilities, PC PipeDream has complete file and keyboard compatibility with Z88 PipeDream.

New features of PC PipeDream include:

- + up to 8192 columns, over 500,000,000 rows (limited by the memory in your computer)
- + automatic mail-merge and label printing
- + use of function keys
- + keyboard reprogrammability
- + foreign character editing and printing
- + linking files
- + financial functions
- + database functions
- + LOTUS file load and save
- + user defined colour displays

PipeDream SpellCheck

PipeDream SpellCheck integrates seamlessly with PC PipeDream to help you find your spelling and typing gremlins. Supplied with SpellCheck is a 93000 word master dictionary. You can also create user dictionaries for your own specialised words.

For further information on PipeDream write or telephone for a free brochure. PipeDream is also available for the Acorn Archimedes. PC PipeDream costs £99.00 +VAT. PC SpellCheck costs £43.00 +VAT. Access and VISA orders welcome.

Colton Software
2 Signet Court, Swanns Road, Cambridge CB5 8LA, United Kingdom
Tel. Cambridge (0223) 311881
Fax. Cambridge (0223) 312010

PipeDream
Breaking down the barriers



The
BBCBASIC(Z80)
Reference Manual
for the Z88

Now available;

the BBCBASIC(Z80) Reference Manual for the Z88

The subjects covered include:

General Information about BBCBASIC(Z80)

Assembler Language

Statements and Functions

The Screen Driver

The Operating System Interface

Printing

BBCBASIC(Z80) Files

Mathematical Functions

Error Messages and Codes

The Format of Program and Variables in Memory

Price £14.50 + £3.50 p&p

Available from M-TEC

ISBN No 1 871895 00 6

W

Wordmongers, Ranger Computers, Rakewell, S&S Computer Advice, Colton Software, Cambridge Computer, Richard Russell, Ian Braby, Dave Stewart, Roy Woodward and others will be there!

O

On Saturday
April 25th 1992

R

RUNNING FROM 10am UNTIL 5pm -
SEVEN HOURS OF HELP & ADVICE.

K

Keep a note of all those little queries, and bring them along

S

*Stantonbury Campus,
Milton Keynes is the Venue.*

H

HELP is free to all, on a myriad of subjects.

O

Only **£4.00** a ticket, from:
Z88 Users' Club, 68 Wellington Street,
Long Eaton, Nottingham. NG10 4NG.

P

PLEASE COME!



Save on batteries with an External Rechargeable Z88 Battery Pack. Different sizes to suit requirements. Ring for details.

Now available for Ranger2 Disk Drive

Z88
EXPORT

Cambridge Z88's available for the following languages. French, German, Spanish, Italian, Swedish, Danish and Swiss.
£219.95 ex VAT

Ranger
UNIVERSE
with **SQUEEZ~88**

SpellMaster
VT 100 Terminal
RangerLink
PC Link

Ranger Disk
SPACE
EP-Fetch
Square 8

£170.38
inc VAT

Ask for our latest Newsletter and Price list - Over 100 Z88 related items.



Please add £4.50 + VAT for p+p

Rakewell Limited . 24 Putnams Drive
Aston Clinton . AYLESBURY HP22 5HH



Exclusively from the Z88 Users' Club:

RangerDisk 2

For the Cambridge Z88

This new version of the established RangerDisk system offers the serious Z88 user fast and reliable data backup. RangerDisk 2 offer twice the capacity of the original RangerDisk, giving 1.44M of storage on each 3.5" High Density floppy disk.

RangerDisk is more than just another add-on floppy drive - because it contains its own MS-DOS floppy disk controller chips, the disk files are fully compatible with any IBM PC or compatible able to read the 3.5" format. This makes for easy data interchange between the unique Cambridge Z88 and any office PC, giving the user the best of both worlds!



Just £259.00



Including VAT @ 17.5% and UK Delivery

Includes Disk Drive, DiskFiler EPROM, AC Adapter, Z88 Cable, Manual. Optional PC Driver Pack - £35.25.

Send payment with order to:

Z88 Users' Club, 68 Wellington Street, Long Eaton, Nottingham, NG10 4NG.

For Credit Card Orders, either write or ring our Credit Card Hotline on 0602 726307 (Voice/Fax) quoting your Card Number, Expiry Date, Card Name & Address and amount to be debited. Please note that RangerDisk 2 for the Z88 is available exclusively from the Club.

RANGER

COMPUTERS LTD

Z88 Price List

COMPUTERS

Z88 (UK)	£189.95
Z88 (Ranger version)	£201.50
Z88 (Int. versions)	£215.95
Rugged Ranger	£299.00

RAM MEMORY

32k RAM Pack	£15.95
128k RAM Pack	£32.95
512k RAM Pack	£87.95
1M RAM Pack	£186.95

EPROM MEMORY

32k EPROM Pack	£16.95
128k EPROM Pack	£23.95
256k EPROM Pack	£57.95
EPROM Eraser	£38.95

Z88 COMMUNICATIONS

RangerLink (25 pin)	£54.00
RangerLink (9 pin)	£54.00
RangerLink Upgrade	£30.00
PC Link II	£27.95
BBC Link	£8.95
Z88-to-Mac	£32.95
Parallel Cable	£18.95
Serial Cable	£7.95
BABT approved Modem	£207.00

CARRYING CASES

Plastic Case	£6.95
Leather Case	£30.00
Topper	£8.75
Field Case	£70.00
Hardcase	£495.00

POWER SUPPLY

Mains Adapter (UK)	£8.95
Nicad Battery Pack	£23.00
Nicad Pack + Charger	£37.50

APPLICATIONS SOFTWARE

Spell-Master	£52.00
SqueeZ'88	£44.00
RangerUniverse 2	£99/125
PC PipeDream (3.5")	£99.00
PC PipeDream (5.25")	£99.00
Vision-100	£175.00
Z-Term	£43.50
z-BASE	£60.00
BJ10e Printer Driver	£20.00

PERIPHERALS

RangerDisk 1- last few	£150.00
RangerDisk Mains Ad.	£17.50
RangerDisk PC Driver	£30.00
ADAM A/D Converter	£250.00
Barcode Wand (HP)	£250.00
CCD Scanner	£277.50

PRINTERS

Canon BJ10ex	£225.00
BJ10e Sheet Feeder	£55.00
BJ10e Battery Pack	£39.00
BJ10e Ink Cartridge	£19.95
Diconix 150+ (P)	£345.00
Diconix Ink Cartridge	£13.00

BOOKS

Z88 Developers Notes	£40.00
Z88 BBC BASIC	£14.50
Z88 Magic	£14.95
Z88 Dabhand Guide	£14.95
Z88 PipeDream (Dabs)	£14.95
Z88 User Manual (CCL)	£17.00

DELIVERY

Next Day	£12.00
Post UK (Small)	£3.50
Post UK (Medium)	£5.00
Post UK (Large)	£6.50

All prices subject to VAT. Deliveries to export destinations can be made VAT free. Delivery charges include insurance. Next day delivery available to England and Wales. Please enquire for prices to offshore islands and Scotland. Postal service is by First Class Recorded Delivery to UK and BFPO. Please enquire for postal rates to other destinations.

ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE. E&OE.

NEW - RangerUniverse 2

All the most popular Ranger Z88 applications in one 256k ROM!

New features for 1992 include support for RangerDisk 2 and a variety of file format options that at last take the nightmare out of transferring Z88 files to Wordperfect 5.1! These features are only available in RangerUniverse 2.

New options in RangerLink for the PC and DiskFiler for RangerDisk allow Z88 Plain Text files to be converted to formats compatible with Wordperfect 5.1 and many other wordprocessors. The transfer substitutes soft carriage returns for PipeDream's hard carriage returns, allowing paragraphs to be reformatted in the usual way. (A feat impossible for regular PipeDream or Plain Text files.)

File format conversion happens 'on the fly' during transfer to either PC or RangerDisk. At present, PipeDream column mode and attributes are not supported, but consideration will be given to this if sufficient demand materialises.

RangerUniverse 2 is available now at £99.00 to personal members of the Z88 Users' Club (all others £125.00). The package offers an unrivalled selection of the best Z88 programs, including the SpellMaster spelling checker, RangerLink for the PC, DiskFiler and the Vision/L VT100 terminal emulator.

To order your **RangerUniverse**, simply send either **£150.99** (£125.00 + VAT and UK postage) or **£120.44** (£99.00 + VAT and UK postage) if you are a personal member of the Z88 Users' Club, or quote your VISA or Access number with expiry date and card address.

Solar Power for Z88!

Solar charging for Z88 'AA' cells is at last practical, even on an overcast British winter's day! Our new solar panel charger has a high performance solar array and measures 15" x 15". It is complete with charging adapter for 4 x 'AA' or 4 x 'C' size Ni-Cd cells. Please note that it is not possible to recharge Ni-Cd batteries inside the Z88. The Solar Power Kit is priced at **£102.23** (£75 + VAT and Courier delivery.)

We accept official orders from qualifying UK companies and government organisations. All others, cheque or P.O. with order please. Alternatively, you can order by telephone quoting either VISA or Access (Mastercard) number. Next day delivery available on all items, subject to stock, £12.00 in most of UK. Please call for freight costs to Scotland, offshore or overseas.
All prices subject to change without notice. E&OE.

Ranger Computers Ltd
Ranger House
2 Meeting Lane
Duston
Northampton. NN5 6JG. England

Telephone: (0604) 589200
Fax: (0604) 589505

More Z88 Miscellany

by M.Foweraker (4423)

Having heard pleas for more articles I have decided to respond. My initial reluctance to contribute again so soon is that as a fairly new user (1.5 years) and not being up on machine code I am basing my comments on general observation rather than fact. Because of this I am quite willing to be corrected.

Why don't the "experts" write?, probably because they have been contributing since '87 and are expecting others to do their bit. For a while I intend to contribute until either I run out of things to say or Roy refuses to publish and return my disks! I also intend to "ask" if certain things can be written by our M/C members to help on common problems. Thus ends my manifesto and down to business.

Calling Robert Ward (3725) - The idea in paragraph 3 of your letter is better expressed thus. (this shows how complex a "simple" idea can be!)

(1) Go to options page and set decimal places to 0 and also any other settings needed. Return to document and make col A width of 1 |W1~E (| means diamond key ~E means Enter key)

(2) put a number 1 in row 1 |X1~E

(3) Tab to B and put in the expression |Xsum(A\$1A1)~E and this will also show 1 {not quite what you want but please wait - by the way this expression means add up everything from A1, and do not shift from there, to A1, but change row if copied to current row ,please do not adjust your set}

(4) Type your document as normal but in col C onwards.

(5) Move back to A1 (|~up|TAB) and mark then go to B1 and mark |Z {~up = up cursor}

(6) Move back to col A (|TAB) and then down to next paragraph and copy |BC (if you look at the expression in B then if row is number 15 the expression will read sum(A\$1A15) and give a result of 2 nearly there!)

(7) Repeat (6) until all paragraphs are marked and then in col A |W0~E and col A will disappear and you are ready to print as soon as you have cleared the markers |Q (else you will only get a 1 printed!)

(8) When you come to edit the document you will need to reveal col A again for this you have to type |W1~downYA~E (~down = down cursor). On |BCing the expression (you will have to have marked one) all the following expressions will move down a line so you will have to go down one line and type |EDRC (Edit Delete Row in Column) to pull them back up.

Doing all this may seem a hassle and so it becomes a job for super CLI!

But first consider setting up a Pipedream file with all your required page lengths, margins and decimal places 0 plus the number 1 in slot A1 and the expression in B1 . Save this as STD.doc or similar and when you want to start a document |FL this file and then |FC it the documents actual name.

Type your document with # in colA where the paragraphs start. When you are finished you will need to go to FILER and execute the numbering CLI pnum (paragraph number) #F|EXpnum~E (# = the square key). This will number ten of your #s and you will need to repeat for the next set. NOTE CLI's are dumb and so you will get up to 9 spare numbers at the bottom of your file to delete manually.

To print out use the CLI pprrt (paragraph print) #F|EXpprrt~E

To add a new paragraph number CLI pren (paragraph re-number) #F|EXpren~E (you could always use only this instead of pnum!)

The CLI's these need to be saved as plain text do not type the comments !onwards and do not leave any spare spaces or lines. I have successfully tested the no comment no space versions and they perform as described.

!CLI pnum paragraph numbering initial in batches of 10 or to taste!

#I CARD#V~S~E	!resets the index page so you go into the right job
~R~E	!go right and enter
CGSa1~E	!go to a1 so that expression could be on line 10 if reqd.
Q	!then it would read CGSa10 etc

	!clear anymarkers
ZT Z	!mark col A then TAB and mark col B (the expression)
BSE##`DYA`E	!search for # in col A (needs ## else taken as square)
BC	!and copy block
`D EDRC	!go down and remove the # and its slot
BNM BC`D EDRC	!Block Next Match Block Copy down Edit Del Row in Col
BNM BC`D EDRC	!repeat this line eight times, or to taste!
Q	!delete the block markers
!CLI pppt printing of paragraph numbered file	
#I CARD#V`S`E	!resets the index page so you go into the right job
`R`E	!go right and enter
Q	!clear markers
W0`DYA`E	!set col A to 0 width
PO`E	!print out if you need wait between pages then PO`D`DY`E
W1`DYA`E T	!reveal A and move to colA
!CLI pren adds a number and the re-numbers the rest	
#I CARD#V`S`E	!resets the index page so you go into the right job
`R`E	!go right and enter
T CSP	!get into colA and save cursor position
CGSa1`E	!go to a1 this should read the same as the equivalent line in pnum i.e. CGSa10 etc
Q	!clear any markers
ZT Z	!mark col A then TAB and mark col B (the expression)
CRP BC	!restore cursor position and copy block
`D ZT Z BD	!go down mark displaced block and remove it

You could say that this is a lot of work for one persons problem, but I believe the principals should help others.

Calling E Jacobs (4234) - Z88 Eprom is as different to Beebug as the BBC B is to the Z88. Most of BeeBug seemed to related to BASIC with some reference to *FX's (at least for the 2 years I took it). Z88 users seem to rarely use BASIC as it is used mostly for Pipedream (mostly WP). Because the Z88 is always running (even in its sleep) the major concerns seem to relate to keeping it happy and

fed. Also crashes on the Z88 are not always a fruitful field of research as the problem with a block copy or switching applications etc. may not be repeatable as they may be caused by an event (static, very low power, bad M/C code et al) which happened days or even months previously!

The result is that problems appear once and are wiped out by the soft or hard reset they invoke! Thus many Z88 owners talk anecdotally to convey the general nature of failures they have had, for instance:- I am running on re-chargables "Rs" (the new high capacity ones) Tut Tut. I have a daily alarm which obviously runs the Z88 for 2mins with no one there (necessarily). The power in the Rs was obviously critically low because next morning "double shift" nothing - Check for stuck keys "d s" nothing. Plugged in AC adaptor LIFE! took it out nothing; plug in LIFE! Switched to fresh set of Rs took out adaptor all OK! On checking two of the Rs had hardly any power the other two were marginal.

So what! Later in the day I noticed that the Z88 was working slowly (not the clock but updating display and switching jobs). Checks on memory free showed about 112k. |KILLED and restarted a few jobs - still slow. Thought no more about it. 13:00 realised that an alarm due at 12:30 had not gone. Set my own alarm for 13:05 and on exiting from ALARM the one due at 12:30 began to run! When all the excitement was over speed was normal. What other dark consequences lurk from this event I wonder, a backup and soft reset is probably called for.

Now to the specific problems mentioned in your letter. The Z88 works with memory in a manner not unlike a "main frame" with virtual memory. On a VM both working memory and files are stored on disk, on the Z88 they share RAM. This is divided into 0.25k blocks and when one is full it takes another from somewhere.

When you start a job it does not take it from the Default Device RAM as set by the panel, just set it to :RAM.3 and you can still start a job, even go to filer and see :RAM.3, try getting there by diamond SV.

Files however are always saved to their appropriate :RAM. If RAM.- did not have its bug maybe you could use that and then any free RAM would be used. Unlike BBC DFS disks the run of sectors (blocks) is not consecutive but jumps about to any free blocks

available. The result is that RAM is filled with a mixture of jobs and files in almost any order and mix. OZ looks after all this to maximise the RAM available but it means that you cannot easily roam into the RAM setting things to rights.

REQUEST TO M/C can a programme be written to unlock IN USE files.

When you say "what options exist when you get NO ROOM" there are three answers to three problems. Simplest and most blaze is if it is a constant problem get more RAM the CLUB 128 internal is good value and speeded up my machine as it was obviously not having to scavenge for RAM to keep going.

This does not solve the problem "in hand" when the message strikes.

The first thing to try, especially if the memory free appears to be adequate is to save it to the other :RAM if this does not work then you can try freeing more space.

From my tests with creating and deleting jobs I have found the following information. Starting DIARY consumes 1k has an apparent 1k overhead on file size. Starting PIPEDREAM consumes 2.25K loading a 1k file uses 1.25k

So in an emergency closing down a DIARY with a saved file size of 4k should yield 6k (somewhere) (as I do not have SPACE I cannot check where) This may then give enough space to get a file saved. Similarly a 4k Pipedream should give at least 7k and every little helps.

If this is still of no avail then start to break the file down (This is ONLY applicable to TEXT ONLY Pipedreams) . Mark the file at the top and then say three pages down (in the last column). |FS add a number 1 somewhere to the name and select save marked block. Then delete the block and so on until there is no file left. Note each save will consume a few k but this will be released with the BLOCK DELETE plus a little more. You may need to switch the RAM being used to complete the process. Now if you type in the name used for each part save at the top of the file as you go then you will be left with a list of file names which if saved a plain text with .p extension can be loaded to give a working file.

The last NO ROOM is more of a problem in every way. If you had plenty of RAM available only a short time ago and now NO ROOM

looms everywhere you probably have had an EVENT. i.e. STATIC or similar. A soft reset (if you are lucky) is coming up either voluntarily or by force, so you need to save the most valuable un-saved data to RAM at least. DO NOT delete the old version to save the NEW you might not make it. Try BLOCK marking the latest data and saving it. |KILL everything that you can without loosing data they will die on soft reset anyway. Try saving the un-saved data again. Delete anything that is stored on EPROM already and see if you can get anything else off the decks. Alas each move can be your last. If you can transfer files to PC BBC etc so much the better. When you have done as much as possible then you might as well press the reset switch and hope that it comes back with an empty INDEX.

Personally I have a comprehensive set of CLIs and these include ones to set things back to normal (as possible) after a SOFT or HARD reset. These may be the subject of further contributions. Also as BASIC seems neglected I will try to write on that topic giving some guidance to those who are reluctant to start, but have hit some of the limits of SPREADSHEET programming - yes you are programmers to!

Z88-Mac File Transfer

by Philip Denwood (0303)

Since buying my Z88 I have found it to be in many ways the ideal computer - cheap, portable and versatile. My only real objection to it is the screen, which with my advancing years and deteriorating eyesight I find a great strain to read in anything short of perfect lighting conditions. I was never very impressed with the original Apple Macintosh screen either - too small and difficult to get the contrast right. Since last November however I have been using a Macintosh LC with a 14" Panasonic colour screen, and the transformation is total. The clarity of the screen itself, the choice of font styles and sizes, the availability of a screen magnification utility and the colours mean that I can happily look at the screen for hours on end without feeling I am sending myself blind.

The LC comes with version 7 of the Macintosh operating system, which on the principle of "if you can't beat 'em, join 'em" includes the "Apple File Exchange" software for reading and writing to

MSDOS discs (3.5" only, of course). Since I use Pipedream on both the Z88 and PCs and am quite happy with it, I often want to work on Z88 and PC-originated documents on the Macintosh under Macwrite or Microsoft Word 4 (what about a Mac version of Pipedream, Colton Software?) and vice versa.

Now, you can save a Pipedream document in Pipedream or plain text format, in the Z88 RAM, Eprom or on a disc (via a disc drive or PC). You can send it the Macintosh through the "Z88-Mac" file transfer software or let the Macintosh read it off an MSDOS disc. In the latter case you can let the Macintosh convert the text by one of two different translation programs. You can even use the "Z88-Mac" software to convert documents within the Macintosh, without using a Z88. All this adds up to a large number of permutations of ways to get a document from one place to another and convert it into usable form. Many of these will either lose some or all of your text formatting (bold, italics etc) or clutter the document up with unwanted control characters, or both. The following are the methods I have found to work with the minimum of such problems.

1. Z88 to Macintosh

To use a Pipedream document (stored in normal Pipedream format in a Z88 RAM or Eprom) on the Macintosh: transfer it over the cable supplied with the "Z88-to-Mac" software, using the Pipedream-Macwrite conversion option. Transfer is slow but reliable, and the resulting document can be used in Macwrite with no trouble. It will also be accepted by Word 4, though in this case funny things can happen to the line width (these are usually easy to correct later). Strangely, Macwrite 2 does not recognise the existence of these documents!

2. MSDOS Disc (Pipedream) to Macintosh

To read an MSDOS disc with Pipedream files on the Macintosh: enter "Apple File Exchange" and insert the disc into the Macintosh. Load the document using the "default translation" option. Then convert it from Pipedream to Macwrite within the Macintosh using the "Z88-Mac" software and proceed as above..

Pipedream documents saved on the disc as plain text can be converted directly into Macwrite files by "Apple File Exchange" using either its "default" or "text" translation option.

These methods are much quicker than those involving transfer over a serial cable.

3. Macintosh to Z88:

Create and save the document in Macwrite (or create it in Word 4 and save as a Macwrite file) and transfer to the Z88 using Macwrite-Pipedream conversion option via "Z88-to-Mac" software and cable. Then save to disc if required via disc drive or PC (that is how this article was produced).

A Word 4 document set out like a database, with one record per line and fields separated by Tabs, will behave like a database when converted into Pipedream - that is, the fields will convert to proper Pipedream columns. (This will not work in reverse, as Word 4 does not have a Pipedream-like column system.)

To conclude; I have found that the ability of the Z88 to communicate with both the Macintosh and the PC enables one to benefit from the advantages of all three types of computer, while bypassing the disadvantages of each. in an integrated and (most of the time) seamless manner.

Printer Set-up Helpline

by David Stewart

Unwanted Printed Characters.

The Z88 codes its instructions to the printer and the printer interprets the instructions according to its own firmware. Correctly sent codes are not printed. If a code is received by the printer that it can not decode then it will be printed. For example, if a printer does not recognise the Printer On code, normally 27,64 , then it will print the unrecognised portion in the top left corner of the paper thus, @ . Correct this by either simply deleting the Printer On code or by replacing it with a correct code to suit the printer.

This problem can become very noticeable with Hewlett-Packard printers with their long strings. A correct string will not print out. Check first for erroneous capital letters where lower case should be used.

Canon BJ-10e Double Wide Double High code.

In my Printer Driver for this code I introduced an error in my transcription from Dennis Groning's letter [see EPROM 5.7.13]. I have corrected this in the version dated 15th January 1992 but now I can do even better as a result of being loaned, for review, a Star StarJet-48.

Canon do not, so far as I am aware, detail the code in the handbook. More usefully Star do and call it **Select Character height, width and line spacing.**

The code, for use in the printer's IBM Mode, is:

ESC, "[@", 4,0,0,0,n,m or if you prefer it all in decimal:

27,91,64,4,0,0,0,n,m

They state, "Selects a combination of character height, width and line spacing according to the value of n and m, as below. Does not move the base line."

n	line Spacing	Character Height
0	Unchanged	Unchanged
1	Unchanged	Single Height
2	Unchanged	Double Height
16	Single	Unchanged
17	Single	Single Height
18	Single	Double Height
32	Double	Unchanged
33	Double	Single Height
34	Double	Double Height
m	Character Width	
1	Single Width (same as ESC W 0)	
2	Double Width (same as ESC W 1)	

The codes to obtain the favoured double height, double width print are therefore:

On Code 27,91,64,4,0,0,0,34,2

Off Code 27,91,64,4,0,0,0,17,1

Please accept my apologies if you have suffered a lock-up in your Canon through trying my previous codes.

Printer Editor code requirements.

In my Notes on Printing I detail the conventions of the Z88 Printer Editor, and mentioned that ASCII codes could be entered in groups between double quotation marks. Now I can revise the information following further experiments made by Dennis Gr|ning, to whom I am very grateful.

Decimal codes: Leading zeros not required, but commas must be used between codes.

ASCII codes: ASCII characters must be entered between double quotation marks, but only at the start and end of the ASCII characters. Commas are not required inside the double quotation marks.

Hex Codes: Hex codes must be entered with a \$ prefix, Commas are not required.

The examples of an HP Underlining code therefore become
27,38,100,68 (Dec codes are entered between commas)

ESC"&dD" (ASCII characters are entered between " " marks)

\$1b\$26\$64\$44 (Hex codes are entered with a \$ prefix)

This does seem to have advantages for ASCII code users, codes are much shorter and more of the code can now be seen in the PrinterEd for instance. But codes still revert to decimal format when the PrinterEd file is <KILLED in the INDEX.

Microspacing.

Microspacing is a print enhancement offered by some printers. It evens out the spaces between each word when the text is Justified. To justify text set the <>O Options page Justify N to Y. If required reformat paragraphs with <>R. When the cursor is on a line the text is shown with single spaces, other lines have the extra spaces distributed alternately towards the left and right hand ends of the line. In microspacing these extra spaces are evenly spread along the line.

I have made several concerted efforts to obtain microspacing on Hewlett-Packard printers and previously had no success. Loan of the StarJet-48 allowed me to get to grips with the problem and I can advise that the following Printer Driver commands do indeed work.

StarJet-48 in IBM Proprinter X24E emulation

[also Canon BJ-10e]

Set the following in the PrinterEd and update the file <FU

10 Characters per inch	12 Characters per inch
HMI: Prefix 27,100	HMI: Prefix 27,100
Suffix 0	Suffix 0
Offset 244	Offset 246

In PipeDream

Set <PM to Yes 12	Set <PM to Yes 10
-------------------	-------------------

StarJet-48 in Epson LQ-850 emulation

Set the following in the PrinterEd and update the file <FU

10 Characters per inch	12 Characters per inch
HMI: Prefix 27,32	HMI: Prefix 27,32
Suffix	Suffix
Offset 238	Offset 241

In PipeDream

Set <PM to Yes 18	Set <PM to Yes 15
-------------------	-------------------

Hewlett-Packard codes

I have also used the HP codes but as yet I have made them work only in limited circumstances, i.e. 20 and 24 characters per inch and any one line must not require more than half an extra space per word space. Suffice it to say that whilst I am now convinced that Microspacing works, and works correctly, I have not yet found the way to output the PipeDream calculated values in ASCII code as required by Hewlett-Packard printers.

Hints for Beginners

by Jack Lawrie (4635)

Some of the things I wish I had been told when I got my Z88 - Don't waste money on 32k RAMs and EPROMs - they are too small. A 32k EPROM for messages or collecting Library files is OK. (Also useful for submitting articles to the Editor!- Roy)

Bury the User guide and get two books - no one book has it all! I have "Z88 Magic" and "Z88 Portable Computing", having sold off others. If you want to master BASIC, short of machine code, get the "BBC BASIC (Z80) Reference Manual for the Z88."

Don't think you can find the ideal filing system right off - you will change your mind almost every week.

If you decide to have an eraser for your EPROMs don't buy second-hand; get a new one or see C. Pearson's piece (5.10.14).

Get everything else second-hand if you possibly can! It pays to advertise, especially when it is free - this mag or MicroMart.

Get to know and use CLIs as soon as possible - great timesavers.

Use the Software Library like it was going to burn down very soon - you can't learn nearly enough from the guide or any number of books.

Files from the Software Library will help you to make maximum use of your Z88 no matter what your principal interest(s) may be - and if you study how the programs do what they do you can benefit enormously.

The best "utility" programs (in my humble opinion) are Z007, Z027, Z028, Z043, Z091, Z163, and X015. X002 is an absolute must if you want to understand and use CLIs, besides saving a multitude of keypresses in moving between tasks and/or files. When you need, and can increase the number of function keys at your disposal to more than ten you are really making progress!

Not everyone will agree with the above, nor will everyone think it says enough to help the beginner - OK, so write to the Editor, surely it's time you responded to his oft-repeated appeals for contributions - no-one is going to laugh at you; in any event you wouldn't hear it.

Small Ads & Swapshop

This service is FREE to members. Please send your Ad to the club Address on page 2. Please keep them as short as possible, and be sure to state whether the items are WANTED or FOR SALE, or if the ad is for a CONTACT.

****FOR SALE****

Z88, TOPPER, RANGER RECHARGEABLE BATTERY, 2 X 128K RAM, 128K EPROM, Z88-MAC LINK, MANUAL, Z88 MAGIC, Z88 COMPUTING, BACK NUMBERS Z88 EPROM - £225 ONO. ALSO BROTHER HR5 PRINTER WITH SPARE RIBBONS AND PAPER ROLLER - £69 ONO. TEL 0329 834037.

****FOR SALE****

Z88, PC LINK, 128K RAM, SERIAL CABLE, MAINS ADAPTER, CASE, BOXED AS NEW. £180. TEL: 0438 79722 (HERTS).

****FOR SALE****

TOSHIBA 3100E LAPTOP, 1M RAM, 20M HARD DISK, 1.44M DISK DRIVE, GAS PLASMA DISPLAY. SOME SOFTWARE ON H/D INCLUDING WINDOWS AND DOS 5. OFFERS INVITED. TEL: IAN ON 0222 450448.

****FOR SALE/SWAP****

SICK PC200 AMSTRAD SINCLAIR PROF SERIES - REPAIRABLE OR PARTS - £50. WILL SWAP FOR Z88 512K RAM OR 2 X 128K EPROMS. ALSO SWAP MSDOS GW BASIC USER GUIDE AS NEW FOR Z88 BBC BASIC OR Z88 PORTABLE COMPUTING BOOKS. RAY ON 0763 242617.

****FOR SALE****

Z88 SERIAL CABLE AND AGENDA FINANCE AND MATHS CARD, OR PART/EX FOR PC PIPEDREAM SPELLCHECKER. TEL JOHN BEVAN ON 0992 582439 OR 503509.

****WANTED****

BBC BASIC REFERENCE MANUAL. TEL LESLIE ON 0532 867996.

****FOR SALE****

Z88, 512K RAM, SPELLMASTER, RANGERDISK WITH EPROM, MAINS ADAPTER, PARALLEL CABLE, 128K RAM, 32K EPROM, ALL MANUALS, BBC BASIC BOOK, PLUS FREE OTHER BOOKS AND Z88 EPROM MAGS. UK DELIVERY INCLUDED. OFFERS OVER £450. 061 445 9686 EVES.

****FOR SALE****

Z88, 128K RAM, SPELLMASTER, 32K EPROM, MAINS ADAPTER, TOPPER, AMIGA LINK. HARDLY USED AND IT'S CHEAP! OFFERS TO MIKE SIGGINS, 081 505 5001.

****FOR SALE****

Z88, TOPPER, 128K RAM, MAINS ADAPTER, Z88 EPROM MAGS. £110. TEL: PAUL ON 0602 257960.

****FOR SALE****

Z88, 128K RAM, 32K EPROM, PC LINK, MAINS ADAPTER, SERIAL CABLE, PARALLEL CABLE, TOPPER, CASE, MANUAL, Z88 MAGIC, USING YOUR Z88, PANASONIC KX-P1081 PRINTER. £260 THE LOT, OR WILL SPLIT PRINTER. TEL: IVOR ON 0895 676012.

****FOR SALE****

Z88, HARD & SOFT CASES, 2 X 128K RAM, 128K EPROM, RANGERLINK, PARALLEL CABLE, RANGER RECHARGEABLE BATTERY PACK, ALL MANUALS - £200 THE LOT, OR REASONABLE OFFER. TEL: IAN ON 081 546 9746 OR FAX ON 081 549 0371.

****FOR SALE****

Z88, CASE, MAINS ADAPTER - £100. Z88-MAC LINK - £15. PC LINK II - £20. 128K RAM - £20. Z88 PORTABLE COMPUTING BOOK - £5. TOPPER - £5. PHONE MARK ON 081 672 8342 EVES.

****FOR SALE****

128K RAM - £20. ZTAPE - £25. MARK WINSTON ON 0222 763724, EVES AND WEEKENDS.

****FOR SALE****

640K SINCLAIR QL COMPUTER, DISK DRIVE, COLOUR MONITOR, SOFTWARE, PRINTER LEADS, JOYSTICK. £180 COMPLETE. TEL: 0948 3056.

****FOR SALE****

Z88, 512K RAM, 128K EPROM, ERASER, RANGERLINK, RANGER NI-CD PACK + CHARGER, MAINS ADAPTER, PARALLEL CABLE, CASE, TOPPER, Z88 EPROM MAGS - ALL AS NEW IN ORIGINAL PACKING - £300 + CARRIAGE. TEL: AL ON 051 220 5470.

****FOR SALE****

Z88 - £135. 128K EPROM - £30. 128K RAM - £30. 32K EPROM - £12. EPROM ERASER - £25. CASE - £6. Z88 BOOK - £7.50. ATARI PORTFOLIO PLUS PRINTER DRIVE ADAPTER £140. ALL AS NEW. TEL: 0534 21606 EVES.

****WANTED****

32K EPROM AND 512K RAM. TEL PHIL HODSON ON 0638 667589.

NEXT ISSUE OUT ASAP!

(GET THOSE CONTRIBUTIONS FLOODING IN!)

ALL CONTENTS ©1992 Z88 USERS' CLUB

ALL TRADEMARKS ACKNOWLEDGED

Z88 EPROM is printed on recycled paper.

DON'T FORGET TO ORDER YOUR TICKET FOR THE NEXT CLUB WORKSHOP - SATURDAY 25TH APRIL 1992, AT MILTON KEYNES. TICKETS £4 EACH FROM THE CLUB ADDRESS ON PAGE 2.

Protect your investment with...

The Cambridge Topper

Our unique lightweight tough keyboard cover protects the Z88 from dust and scratches, and guards all your valuable work against accidental battery drain caused by keyboard pressure.

Latest 100g version 1.5mm thin: stronger yet still fits inside standard Cambridge padded bag.

Order yours now at £9.50* all inclusive – delivery by return.

*UK only. Airmail to Europe £11, elsewhere £13.50. Also available from leading Z88 dealers.

Wordworks Ltd

WORDWORKS LTD, 49 OLNEY ROAD, EMBERTON,
OLNEY, Bucks MK46 5BU. Tel/Fax: 0234 713757



THE MUSIC SUITE LTD.

Cenarth, Newcastle Emlyn,
Dyfed SA38 9JN.

THE Z88 LINK II

- Full remote control of Z88 without an EPROM
- Advanced batch processing
- Archival of all Z88 files (with verify)
- Converts Pipedream files to database, wordprocessor and spreadsheet formats
- Print from Z88 to any printer connected to host computers parallel port
- Print full Z88 directory

Available for: ST, PC and Amiga

Each program comes on disk with a lead and manual for £34.95

(PC version: please specify whether a 3.5" or 5.25" drive and whether the lead is to fit a 9 or 25 pin socket)

Make cheques/POs payable to:
The Music Suite Ltd

You can order with VISA/ACCESS:
call: (0239) 710594 or fax: (0239) 711343

HiTEK Marketing

72 Longmoor Lane, Breaston, Derby. DE7 3BB. New Tel: 0332 873987

****STAR BUY OF THE MONTH****

128k RAM Pack - Only £35.00!

FOR ALL ORDERS RECEIVED BY 31ST MAY 1992

Z88 Starter Pack- ONLY £249.00!

Computer, 128k RAM, Parallel Cable, Mains Adapter, Carrying Case, Batteries.

Books Z88 PipeDream - A Dabhand Guide £14.95
Z88 Magic £14.95

Duracell MN1500 AA-size Batteries
Packs of 4 - Dated 1995! Min order 3 packs (12 batteries) £6.50 - 4 packs or more £2.10 each!

Tractor Feed Self-Adhesive Address Labels.
4" x 1 7/16" (as used for Z88 EPROM)
200 labels - £2.00 400 labels - £3.50
800 labels - £6.00 1000 labels - £7.00

Software

Spellmaster £56.00
Z88-BBC Link £10.50
PC Link II £32.00
(Please state whether 9 pin to 9pin or 9 pin to 25 pin lead required.)

Ni-Cd Battery Holder

Run your Z88 on low-cost rechargeable batteries.

Battery Holder for 5 cells - plugs into your Z88 - just £4.95
5 Quality Rechargeable Batteries - £6.95. Charger - £7.95
SAVE £2.00 on complete kit of Holder+Batteries+Charger - ONLY £17.85

SqueeZ'88-
Save RAM on
your Z88
£46.00

Z88 Computer	£210.00	Parallel Cable	£22.00
32k RAM Pack	£18.00	Serial Cable	£9.00
128k RAM Pack	£38.00	Topper Cover	£9.50
512K RAM Pack	£100.00	Carrying Case	£8.00
1M RAM Pack	£215.00	BBC Link	£10.50
32k EPROM Pack	£19.00	Mains Adapter	£11.00
128k EPROM Pack	£28.00	EPROM Eraser	£44.00
256k EPROM Pack	£65.00		

Z88 Users' Club EPROM vouchers given with all the above except Star Buy.
One voucher worth £1.00 for each complete £50 spent per order. Vouchers are valid for one year and can be used to join the Club or to renew membership, or towards any future orders.

Please add 50p per order part P&P. UK despatch only. Cash with Order.

Proprietor D. Woodward. Not registered for VAT. Sorry, no credit cards.